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[NEWSLETTER], no. 8, Nov. 2008 (Ctr. for Energy & Envtl.
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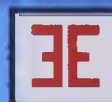
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U.S. Senators and International Experts Meet at CEES-Organized Event to Discuss Energy Justice

Kelly Crandall, CEES 2L Volunteer

One and a half billion of the 2.5 billion people living in poverty worldwide live on less than a dollar a day. They meet their cooking, heating, and lighting needs primarily by burning biomass. The vast majority of these energy-oppressed poor may never benefit from large-scale electricity production and grid extension projects. Access to intermediate energy technologies, such as improved cooking stoves, could prevent 1.6 million premature deaths each year from pneumonia, carbon monoxide, lung cancer, and other illnesses caused by indoor air pollution, while also meeting the basic energy needs of the impoverished. Moreover, recent peer-reviewed studies indicate that such technologies could substantially reduce the production of black soot, mitigating the effects of global climate change.

Removing barriers to sustainable development by improving access to alternative energy technologies is a primary goal of CEES' Energy Justice Program. In order to raise the profile of energy justice challenges facing the developing world, CEES collaborated with the Austria-based Renewable Energy and Energy Efficiency Partnership (REEEP) to host a policy briefing at the Capitol Complex in Washington, D.C. on September 18, 2008.

See Energy Justice, Page 2



Senator Richard Lugar (R-IN)
& CEES Director Dr.
Lakshman Guruswamy.

CEES Profile: Jonah Levine; Senior Professional Research Assistant

Kate Gerth; CEES 1L Volunteer

Whenever a CEES member has a problem requiring serious science or engineering chops, the member immediately turns to the one and only—Jonah Levine. Although he's the office guru on engineering, Jonah is multitalented. "He's tremendously flexible," says CEES Research Fellow Adam Reed, "he can cogently speak ecology, engineering, and policy all in the same paragraph."

After getting his BS in Applied Ecology and Environmental Science, Jonah began working as a field biologist, first in South Dakota and then New Mexico, where he studied species such as swift foxes, grey wolves, and spotted owls.

See Levine, Page 6



Heading Photos: Top - Senator Ken Salazar (D-CO), Chair of the Event, gives his opening remarks at the CEES/REEP D.C. Briefing
Bottom - Dr. Bryan Willson speaks to CEES Staff & Volunteers about cook stoves at the CSU Engines and Energy Conversion Laboratory

the center for energy & environmental security

Energy Justice (continued...)



**Dr. Kandeh Yumkella,
Chair, UN Energy &
Director-General, UNIDO**

because they offer decentralized solutions that are available and accessible to everyone. He noted "U.S. energy and foreign-assistance laws and policies can be strengthened to better facilitate energy justice by, for example, specifically providing and leveraging technical and capital assistance for the development and deployment of appropriate energy technologies in developing countries."

Dr. Kandeh Yumkella, Chair of United Nations Energy and Director-General of the United Nations Industrial Development Organisation (UNIDO), further explained the urgent need for U.S. leadership in providing capital and technological assistance for the development and distribution of intermediate energy technologies, referring to his first-hand experience of growing up in Sierra Leone without access to modern energy services. Dr. Marianne Osterkorn, International Director of REEEP, and Her Excellency Valerie Caton, the U.K. ambassador to Finland,



**Her Excellency Valerie Caton, U.K.
Ambassador to Finland & former Head of
FCO Climate Change and Energy Group**

The briefing focused on the need and opportunity for the U.S. to take a leadership role in addressing energy justice challenges in conjunction with international partners like REEEP, the U.K., and the United Nations. Approximately 130 representatives from federal agencies, congressional offices, embassies, research institutions, development banks, law firms, and universities attended the standing-room-only event.

Speakers at the briefing were leaders in the field of renewable energy and energy efficiency policy. Senator Ken Salazar (D-CO), Member of the Senate Committee on Energy and Natural Resources and Chair of the Event; Senator Richard Lugar (R-IN), Ranking Member and Former Chairman of the Senate Foreign Relations Committee; and Under-Secretary of State for Democracy and Global Affairs Paula Dobriansky all emphasized the interest of the United States in reducing global poverty and its efforts to do so by accelerating the deployment of renewable energy and energy efficiency measures.

Dr. Lakshman Guruswamy, Director of CEES and the Nicholas Doman Professor of International Environmental Law at the University of Colorado Law School, discussed how intermediate energy technologies and the efficient use of energy will play a critical role in achieving energy justice



**Under Secretary Paula Dobriansky, U.S.
State Department, Democracy and
Global Affairs**

who was closely involved in the development of REEEP as Head of the Climate Change and Energy Group in the U.K. Foreign and Commonwealth

Office, addressed their contributions in this regard: "Energy justice can be achieved by directing foreign investment into renewable energy and energy efficiency projects in the developing world. Attracting investors, both foreign and domestic, public and private, requires supportive regulatory frameworks that minimize risk and utilize innovative finance tools – both of which are facilitated by our partnership."

This event provided an opportunity for building connections between political leaders and other sustainable energy experts. It also marked the beginning of collaboration between CEES and REEEP to address barriers to energy justice through projects employing technology transfer, information-sharing, policy development, and market mechanisms. **EE**

A Local Lab with a Global Impact: CEES Tours CSU's Engines and Energy Conversion Laboratory

Kate Gerth, CEES 1L Volunteer



Dr. Bryan Willson explains EECL's cook stoves.

Just a short creek-side stroll away from a well-known Belgian beer Mecca in Fort Collins lies the Engines and Energy Conversion Laboratory (EECL) at Colorado State University, where CEES enjoyed the gracious hospitality and vast knowledge of EECL founder and Director, Dr. Bryan Willson, on July 9, 2008.

EECL excels at promoting greater efficiency, whether from engines or algae. Unlike basic research labs that focus on applications on a very distant horizon, EECL prefers to get things into production. Its many projects work to increase efficiency while decreasing hazardous pollution, carbon emissions, and waste. EECL's many impressive accomplishments include saving over 14 billion cubic feet of natural gas, developing cookstoves that cut particulate emissions and fuel consumption, devising retrofit kits for 2-stroke engines that reduce dangerous pollution, and growing algae with the potential to provide environmentally responsible biodiesel. Two spin-off companies, the non-profit Envirofit International and the for-profit Solix Biofuels Inc., promote EECL's developments and move them into the marketplace.

EECL began in 1992 when the City of Fort Collins partnered with CSU, which provided a cavernous, abandoned power plant. For the first three years of the lab's existence, it was without heat and bathrooms. Nevertheless, early work on a natural gas pipeline engine produced a series of environmental and economic improvements used today by every natural gas pipeline engine in the country.

After conquering the complexities of mammoth engines, Dr. Willson and the EECL moved on to a far more difficult problem—a simple, wood-burning cook-stove.

See EECL, Page 7

First Year Law Students Join CEES

Chris Achatz, CEES Volunteer Coordinator

CEES volunteers commit to more volunteer hours than any other group of first-year law students at the University of Colorado. Volunteers are expected to commit five to ten hours a week throughout their first year of law school, a year that many practicing lawyers affectionately recall as the most trying year of their professional life. Our past volunteers have gone on to clerk for the Colorado Supreme Court, work for the EPA, join leading law firms like Gibson, Dunn & Crutcher LLP, and become leaders in their communities.

On August 26, 2008 CEES hosted its annual informational meeting for new law students interested in applying to volunteer. To our delight, we had a spectacular turnout with close to fifty students attending. Each project manager gave a presentation about a project CEES is working on and encouraged interested students to apply for a volunteer position with CEES. Within a few hours, volunteers started to turn in applications.

By the deadline CEES had amassed a large stack of applications, cover letters, resumes, and writing samples from the applicants. As we started to review these materials, it did not take long before we could say with complete certainty that this applicant pool was by far the most qualified CEES had ever had. While reviewing the application materials, CEES faced the difficult logistical fact that we would not be able to accept all the applicants and therefore would have to turn down some students with very impressive credentials. After some very tough decisions, we narrowed down the applicants to the 18 most qualified volunteers.

Among our new first year (1L) volunteers are four people who have worked on drafting legislation, three with Masters degrees, and many more with degrees in environmental sciences. Our volunteers have a strong history of volunteering and working for groups interested in environmental sustainability, including Environmental Texas, the US Geological Survey, the Sierra Club, the Colorado Foundation for Water Education, the National Renewable Energies Laboratory, the Sea Education Association, the Sierra Business Council, the Colorado Water Quality Control Commission, the City of Boulder Parks and Recreation, and the National Center for Atmospheric Research.

All volunteers shared personal interest stories about their conservation efforts, including one who told us "As part of my personal conservation efforts, I sought to reduce my fossil fuel consumption. I bought a used VW diesel Beetle and began a routine of driving to the industrial part of Los Angeles to purchase 5-gallon buckets of 100% biodiesel made from soybeans."

Another reported about their last three years working for the Colorado House Majority. "During my tenure," the volunteer reported, "more legislation to spur the advancement of renewable energy has been passed than at any other time in the state's history."

See 1L Volunteers, Page 8

An Interview with Frank Barnes

Mike Kopp, CEES Research Associate



**Distinguished Professor
Frank Barnes**

When I arrived at the Engineering Center on the University of Colorado campus this summer to interview Professor Frank Barnes, there was a slight problem. After spending a few days out of town, Professor Barnes had returned to Boulder to find his office off-limits after a leaky pipe had filled it with several inches of water. Although uncertain whether his records were intact, Professor Barnes was eager to discuss a range of energy topics with me, from Boulder's imminent smart-grid development to the increasing role of CEES in the energy arena both in Colorado and nationally.

Professor Barnes is one of the most distinguished engineering professors at CU. He is the co-founder of the Interdisciplinary Telecommunications Program at the College of Engineering, a groundbreaking program that was awarded the 2004 Bernard M. Gordon prize by the National Academy of Engineering. He is also the former chair of the electrical and computer engineering department, and a member of the National Academy of Engineering. He has a range of academic interests, which currently center around energy and the effects of electrical and magnetic fields on living tissue. Professor Barnes also has a long history of involvement with CEES and was one of the first people CEES Director Dr. Lakshman Guruswamy approached when he began proposing an energy research center at the University of Colorado Law School. Since that time, Professor Barnes has provided engineering support and advice to CEES, as well as sharing one of his researchers, Jonah Levine. (For more about Jonah, please see Page 1).

Another of Professor Barnes' interests is energy storage, which he described as technically feasible and vital to renewable energy development, but not an issue many policymakers at the state and federal level have tried to grapple with. Energy storage, he explained, is important for renewable energy because wind and solar, the two biggest sources of renewable electricity, are intermittent resources. For example, in times of high production wind energy provides 30% of the electricity on the grid in Colorado.

See Barnes, Page 7

Elephant Energy

Doug Vilsack, CEES Alumni



Doug Vilsack and the recipient of a "BOGO" solar light.

In Africa, it's easy to forget that a peaceful sunset swiftly brings the dark. I stopped walking to watch the red sun dip behind a sprawling acacia tree. There was no sound. The dust settled. An instant later I stood alone on a road in Africa at night. But the darkness is different in Africa: the only light comes from the moon and the stars. In fact, where I live in Namibia, elephants outnumber streetlights fifty to one. With these big guys stomping around, a flashlight can save your life. Luckily, I had fifty-one flashlights in my bag. A week after taking the bar exam I was in Africa carrying Elephant Energy.

Africa truly is the Dark Continent. Excluding South Africa and Egypt, it is estimated that only five percent of Africans have access to electricity. The number drops to two percent in rural areas. In total, Africans make up a large chunk of the 1.6 billion people who live without electricity worldwide. A few years ago, Mark Bent, the founder of Sunlight Solar, decided to do something about these mind-boggling statistics.

To fight the darkness, Mark gave light. Sunlight Solar will deliver a BoGo solar flashlight to your village, be it Albuquerque or Addis Ababa. "BoGo" stands for: buy one, give one. With each light purchased in the developed world, a second identical light is donated to an organization that will distribute it in the developing world. The rechargeable batteries in the BoGo light last for 750 to 1000 individual nights of use, with a user enjoying an average of six to eight hours of light every night. This is nice in America, but life-changing in Africa. What's more, the lights reduce firewood consumption, don't attract malaria-causing mosquitoes and come in orange for men and pink for women. As far as I'm concerned, sliced bread doesn't even compare.

I discovered the BoGo during a meeting with the Center for Energy and Environmental Security (CEES) at the University of Colorado Law School. I also discovered that buying BoGos is addictive. **See Elephant Energy, Page 6**

EnergyPledges:

Bringing Transparency and Accountability to International Energy and Climate Pledges

Kevin Doran; CEES Associate Director and Senior Research Fellow



After the Greek legend Prometheus created man, Zeus gave him the task of determining how men should give sacrifices to the gods. Prometheus killed an ox and put its parts into two piles. In the first pile he hid all the best pieces of meat in the skin and stomach of the ox. It looked meager. In the second, he placed the bones and less desirable parts under a covering of rich fat. Zeus, of course, chose the second, more attractive pile, hoping it held promise of a better future for the gods. As a result, until the end of time the gods must be content with a sacrifice of bones and fat—or so the story goes.

If Zeus had been a little more circumspect and taken the time to investigate his choices, he would have easily avoided Prometheus' trap. The obvious lesson is that we should not judge our options based on their surface appearance. Rather, we should take the time to thoroughly analyze the choices before us.

In response to the ongoing energy crisis and the threat of global warming, governments, corporations, and other non-governmental actors are developing policies and technologies that promise to provide clean and affordable energy while reducing greenhouse gas emissions. Indeed, there are already hundreds of international treaties, dozens of partnership agreements, scores of pledges found in political resolutions, and many other commitments all promising to advance sustainable energy technologies and policies.

While these commitments appear to be promising, we need to discern how effectively they have been implemented and to what degree they actually achieve progress towards sustainable energy goals. We need, in short, to ensure that we don't fall into the same trap that Zeus did of accepting things at face value, and suffering adverse consequences as a result.

With generous support from the Argosy Foundation, CEES will publicly launch a project in early 2009 that will help mere mortals look past the veil of rhetoric to see just what, if anything, is happening as a result of the international energy and climate commitments entered into by governments, industry, and NGOs.

Entitled the EnergyPledges, the project—which has been in development for the past year—will utilize what might best be called an online controlled-access wiki-system to track and monitor the implementation of international sustainable energy commitments. The concept of using a controlled and collaborative online system in this way is without real precedent.

See Energy Pledges, Page 8



Student Comment: *Scott Dunbar*

CEES 1L Volunteer

Empowering Electricity Consumers to Save with In-Home Displays

The "Prius effect" describes the phenomenon of Toyota Prius drivers achieving even higher gas mileage than the car's already-above-average official rating because the drivers change their driving habits based on access to information that helps them reach this desired effect. A similar effect has also been shown to encourage electricity customers to save energy.

The Prius comes equipped with a special display that shows the driver, in real-time, the current mileage being achieved per gallon of gas (MPG). An observant driver learns quickly that changing their style of driving significantly changes the MPG on the display. For example, quick accelerations and traveling at high speeds make for a lower MPG rating, while gradual starts and stops and driving slower than 60 MPH improves MPG. Some Prius drivers achieve up to 60 MPG, a 33 percent improvement over the Prius' highway rating of 45 MPG.

In terms of energy, real-time information about electricity use can help energy customers achieve significant savings on their energy bills. Providing a function analogous to the Prius' MPG display, in-home displays are devices that provide easy-to-read data informing a residential consumer of their current electricity use in kilowatts (kW), their total energy use in kilowatt-hours (kWh) and dollars for the current billing period, and other useful and interesting information such as current temperature and greenhouse gas emissions. Just like a Prius driver, a conscientious and educated consumer can learn rather easily how his behavior affects his energy usage and his pocketbook.

Consumers using in-home displays see the effects of their actions on their energy bills immediately. Whenever an in-home display user turns off the television or replaces an old appliance with a more energy-efficient model, the consumer can see the current kW reading decrease and watches the total dollar display spin slower. Instantaneous feedback shapes the behavior of an educated and informed consumer much more effectively than a monthly bill, making for an empowered consumer who better understands their own choices and the effects of those choices on their bill and the environment.

Another principal benefit of the in-home display is that it constantly reminds consumers that they are purchasing more electricity every time they turn on a light.

See Dunbar, Page 8

Levine (continued...)

But Jonah soon decided that he wanted to stop quantifying species decline and start working to stop it.

Not knowing exactly how to combat species decline, Jonah worked a year at Cal-Wood Education Center in Jamestown, Colorado where he reveled in revisiting the fundamentals of science through educating others. "Important things would dawn on me that I had once regurgitated onto an exam," Jonah recalls, "but that I really didn't get until I was kneeling down there in the snow with an 11-year-old."


It was in the midst of his Cal-Wood experience that Jonah had a revelation—the way we consume our resources dictates the rate at which we deplete our environment. Aiming to obtain the credentials he would need to help dictate how resources are used, Jonah left tranquil Jamestown and enrolled in a graduate program in engineering at CU to study energy systems and integration with Professor Frank Barnes. (For more about Professor Barnes, please see Page 4).

The systems-level approach is something Jonah truly feels is lacking in the conversation about sustainable energy today. "The idea of sustainable energy infrastructure isn't just wind energy," says Jonah. "It means a whole suite of resources. It's about using them at the right time and the right place. The conversation needs to change from renewable energy to sustainable development."

CEES Associate Director Kevin Doran remembers getting to know Jonah back when CEES was EESI and they were both working near a remote corridor of the engineering building. Now, having completed a fellowship with the Rocky Mountain Institute and graduated with his Master's degree in 2007, Jonah currently splits his time between CEES and the Electrical Engineering Department at CU.

At CEES, Jonah works on two major projects: the Colorado Energy Profile, where he works on quantifying the energy flow through the state of Colorado over the last 10 years, and Biochar, where he will be organizing the next North American conference (August 9th-12th) and coordinating the efforts of researchers. Within the Electrical Engineering department, he has continued to focus on the topic of his Master's thesis: energy storage and integration. His projects in this area include research on compressed air energy storage—finding underground geologic formations that can contain high-pressure air for long periods of time. He is also working on pumped hydro-storage—the old-fashioned but highly efficient way of storing energy by changing the elevation of mass. Jonah also does contracting work for companies seeking his expertise.

When he's not juggling half a dozen projects, Jonah enjoys the wonders of Colorado via mountain bike and snowboard. He hopes someday to return to Xalapa, Mexico, where he once lived and traveled. "What makes Jonah unique is that the gleam in his eye that appears after completing some complex feat of engineering can also be triggered by a great mountain bike ride, a pint of Colorado brew, or by growing organic tomatoes in his garden," says Julie Teel, CEES Senior Research Fellow.

Jonah's down-to-earth and completely unassuming nature endears him to his colleagues and effectuates his work. "His humility and modesty is disarming," says Reed, "but it indicates a deeper understanding of energy problems that makes him quick to adapt and challenging to keep up with." 


Elephant Energy (continued...)

First, I bought two: one for me and one for Africa. Then I bought one for my girlfriend. That meant another for Africa. A few days later, Sunnigh mistakenly sent me another light. I took it as a sign and bought a plane ticket to Africa. In two months I raised enough money from friends to buy fifty BoGo lights and set up a non-profit, Elephant Energy. After the bar exam, I stacked fifty-one BoGos in my carry-on and boarded a plane for Africa.

Three days later I was in Africa, and it was dark. So, I clicked the button on number fifty-one. This was my third time in Africa and I didn't really need the light to find my way home, but the cobras gave me enough motivation to use one. The World Wildlife Fund (WWF) and its local counterpart, Integrated Rural Development and Nature Conservation (IRDNC), have been changing lives in their efforts to support community-based natural resource management in Namibia. In the past, rural residents received few benefits from wildlife, but suffered the costs associated with problem animals. An elephant can destroy an entire crop in a few minutes and a pride of lions can quickly dispatch a herd of cattle. In the past, poaching was the solution to these problems. In response, the government passed legislation allowing communal area residents to directly receive revenue from trophy hunting and tourism concessions. This provides an incentive for conservancy members to protect wildlife while generating revenue for rural development. Now that conservancies are making money, the question is how to spend it. That is where Elephant Energy comes in.

In a month, I distributed fifty-one lights to nine nature conservancies and many other organizations. The reaction was always the same: people wanted more. When I told them they would have to pay, they said: *fine, can you bring one tomorrow?* Unfortunately the answer in August was *No*. Part of Elephant Energy's mission is to change the answer to *Yes*.

I am back in Colorado now. In my office at Davis Graham & Stubbs I have fifty-one photographs, a smiling African and a BoGo in each. I work for a law firm, but I also work for Africa. In the two months since my return, 124 lights have been Bought ("Bo") and 124 lights Given ("Go") to Elephant Energy through www.bogolight.com. So, as you're thinking about presents for holidays or birthdays, think about giving two gifts instead of one. Buy one BoGo for someone you love and give one to help us light Africa. Go to <http://elephantenergy.googlepages.com> to Buy one BoGo for you and Give one to Elephant Energy in Namibia.

For more information about this project, please join us Tuesday, November 11 from 12:00pm to 1:00pm for a presentation in Room 205 of the Wolf Law Building at the University of Colorado Law School. 

the center for energy & environmental security

EECL (continued...)



CEES Director Lakshman Guruswamy with an EECL retrofitted tuk-tuk

75 percent. A problem, however, arose with the implementation of the clean cook-stoves. No light escapes the closed combustion chamber, depriving families of light sources on which they rely. Consequently, the EECL team designed an experimental stove with a thermoelectric device that can power an LED. Envirofit, with a 25-million dollar commitment from Shell, plans to build and distribute 10 million of these cook-stoves over the next five years.

In 2002, students at EECL entered a contest to make clean, quiet snowmobiles, little knowing that it would lead to the formation of a non-profit company with the potential to reduce emissions dramatically all over the world. EECL's snowmobile, with its direct-injection 2-stroke engine, proved 300 times cleaner than a stock model. Dr. Willson's researchers then used the technology to retrofit other dirty, wasteful 2-stroke engines, like the millions currently spewing dangerous hydrocarbons, smoke, and carbon monoxide in developing countries. The 100-million small vehicles in Southeast Asia, known as tuk-tuks, emit as much pollution as 2.5 billion cars. By replacing the carburetor with a direct fuel injector, fuel enters the combustion chamber without being mixed with exhaust and lubrication oils. This improves the efficiency and reduces the emission of hydrocarbons (by 99.7%) and carbon monoxide (99.9%). Tuk-tuk drivers in the Philippines who have used the kits notice dramatic savings in fuel and oil costs. Envirofit plans to have 15,000 retrofits in Asia by the end of the year.

Although leaping from engines to algae seems ambitious, the project to produce cheap biodiesel fits in perfectly with EECL's goals and aptitude for solving challenging engineering problems. Founded in 2006, Solix Biofuels intends to commercialize technology that uses algae to produce an alternative to foreign oil and corn ethanol. Algae possesses multiple advantages in the search for alternative fuels. Algae consumes carbon dioxide while efficiently converting sunlight to chemical energy without the use of soil and with 99% less water than traditional agriculture. Solix plans to partner with New Belgium Brewing Company to use their exhaust gases and warm water waste streams to feed and nurture the algae.

One of the truly remarkable features of EECL is the passion researchers have for bringing cutting-edge technology to parts of the world that truly need it. Even the walls of Dr. Willson's office, crowded with colorful images of people and places the world over, illustrate the global outlook and expansive vision of the lab. In the short time since the CEES field trip, *The Economist* featured Dr. Willson and EECL in an article and, even more impressively, the crown princes of both Denmark and Spain presented EECL with the 2008 Royal Award for Sustainable Technology Transfer. **EE**

Barnes (continued...)

But on exceptionally calm days, it contributes very little. Without storage, electricity must be consumed as it is produced, and renewable generators like wind turbines must sometimes be shut down even when the wind is blowing if there is no demand for their electricity. Energy storage, however, provides a way for utilities to harness renewable energy when it is available and compensate for down times.

According to Professor Barnes, pumped hydro is a good storage option in mountainous areas like Colorado. Pumped hydro involves building two ponds: one at the top of a hill and another at the bottom. When extra electricity is available, it powers a pump to move water to the upper pond. When the wind isn't blowing but electricity is still needed, the water is released downhill and turns turbines to produce electricity.

Although some pumped hydro operations already exist in Colorado, many more are needed to take full advantage of Colorado's wind and solar potential. Professor Barnes recently proposed to oil and gas developers on the Roan Plateau that, rather than re-injecting waste water into natural gas wells as they currently do, they clean the water and use it to power pumped hydro facilities, which could use the many mesas in the area to generate significant electricity.

Owing to his involvement with CEES from the very beginning of the organization, Professor Barnes has a unique perspective on CEES's evolution. When I asked him whether CEES is fulfilling his expectations as an energy-policy research organization, his answer was unequivocal. "From my point of view," he said, "I am delighted to have CEES around. CEES winds up interfacing with politicians and decision-makers in a way I normally would not." Politicians, Barnes says, don't always understand the technical aspects of the legislation they write, but if they write legislation poorly, they can kill engineering solutions. CEES provides an important bridge between engineers and other technical specialists and policymakers, and is now helping legislators understand that energy storage is an important component of renewable energy development.

Professor Barnes is presently working with the Colorado legislature and CEES to write legislation to differentiate pumped hydro from regular hydroelectric power. **EE**


Dunbar (continued...)

This prompts consumers to use electricity with the same consideration they give to other purchases. With the help of the display, consumers also learn to notice when there is some device left on unnecessarily that is wasting energy and take action to find it and turn it off. Like the sound of a water faucet left running, the in-home display makes electricity waste visible.

The energy-saving potential and other benefits of in-home displays would seem to make them perfect candidates for utility demand-side management (DSM), but few utilities include the displays in their program offerings. DSM refers to the practice of a utility, under the supervision of its regulator and usually at the regulator's behest, helping its customers save energy through rebates for energy-efficient products, home weatherization, appliance tune-ups, compact fluorescent light (CFL) giveaways, and other similar programs that reduce the utility's overall load, shave peak demand, and eliminate or postpone the need for new power plants. Because a utility must spend money to implement DSM programs and also sells less energy as a result of a program, a regulatory body will allow a utility to recover its costs for each verifiable kWh it helps its customers save.


However, the savings created by in-home displays are not verifiable, consistent, or even guaranteed. In comparison to installing a more energy-efficient air conditioner, which will save energy with no need for the consumer to adjust their behavior, an in-home display results in savings only as a result of a consumer's voluntary behavior changes. With in-home displays, saving energy is totally up to the consumer, who is, of course, free to ignore the energy consumption information.

But tackling climate change and the nation's rising demand for energy requires using all available resources for saving energy. Regulators should create a new model of cost recovery that will encourage utilities to provide consumers with in-home displays and to teach consumers how to use them. Saving energy behind the scenes with new air conditioners and the like is part of the solution. But consumers can also make the decision to save energy by changing their behavior, and to do that they must be empowered with information.

For a list of sources used to write this article, please visit: <http://www.colorado.edu/law/eesi/News/008/Sources.html> 

1L Volunteers (continued...)

These stories are representative of the many impressive accomplishments of the new class of CEES 1L Volunteers. The contributions of these volunteers are already visible—several have been involved in this very issue of CEES News!

CEES would like to make a heartfelt welcome to all of its new 1L volunteers: Elise Aiken; Christian Alexander; Jessica Anderson; James Barry; Ari Berland; Jeff Candrian; Stephen Chesterton; Scott Dunbar; Tawnya Ferbiak; Kate Gerth; Katherine Gleeson; John Hoelle; Therese Kerfoot; Meg Panzer; Christine Rinke; Shannon Rollert; Matt Samelson; & Leslie Samuelson 

EnergyPledges (continued...)


Projects like the well-known Wikipedia—a free online, collaboratively authored encyclopedia—have harnessed the power of collaborative authoring in a way that is truly groundbreaking, but they have received extensive criticism regarding the quality and accuracy of the information they present. They are truly “open” in the sense that they allow literally anyone to contribute and edit data with few or no restrictions.

Within the context of international energy security and climate change, EnergyPledges is meant to take the idea of collaborative authoring to the next level. It will circumvent the quality and accuracy problems that plague the fully “open” model by only allowing approved writers to submit information into the system. Additionally, these submissions will enter into the public website only after they are reviewed and accepted by a project editor.

It is extremely difficult to obtain reliable facts and information pertaining to the implementation and impact of the agreements in our database. CEES' distributed online system will enable experts including academics, government personnel, international institutions, and civil society representatives to provide CEES with that information for both hard and soft law instruments.

Despite the “closed” nature of the system, the public will still play a critical role in providing information. Each commitment being tracked by the system will have a public page in which registered members of the public (registration being free) can add their own information and perspectives regarding the commitment.

The information collected by EnergyPledges will be made easily accessible to everyone. Among other things, the public will be able to search for particular instruments, read the full text of any instrument, compare instruments, track changes in the database, and even contribute to an open discussion forum.

By making this information freely available to the public, EnergyPledges will help to establish an environment of transparency and accountability with respect to these commitments. It will enable governments, corporations, and decision-makers of all stripes to see what is and is not working, and to glean lessons from past failures and successes that can be used to strategically improve other climate change and sustainable energy-related efforts. A preview of EnergyPledges is currently available at <http://www.energypledges.org> 

For More CEES News, please visit:
<http://www.colorado.edu/law/eesi/News/008/MoreNews.html>

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